

# **2006 Survey of Community Drinking Water Systems**

**Cost of Water**

**Rate Structures**

**Water System Revenue**

**Infrastructure and Financial Condition**

**Secondary Irrigation Systems**

**Anticipated Projects**

**Division of Drinking Water  
Utah Department of Environmental Quality**

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## **Forward**

This document was prepared by the Division of Drinking Water, Utah Department of Environmental Quality from data supplied by community drinking water systems within the State of Utah. If you have any questions or comments about this report or the survey please contact Michael Grange of the Division of Drinking Water at [mgrange@utah.gov](mailto:mgrange@utah.gov) or by phone at (801)536-0069.

This document is also available from the Division's web site:

<http://drinkingwater.utah.gov>

Every effort has been made to present the data as completely and accurately as possible. However, due to the nature of the survey, data accuracy and completeness can not be assured and this report is presented on an "as-is" basis.

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## Executive Summary

There are 462 community water systems registered in the State of Utah. The Community Water System Survey was sent to each system with a request that the survey questions be answered and the completed survey returned to the Utah Division of Water Rights. The forms were forwarded to the Utah Division of Drinking Water where they were analyzed and the data summarized for this report. A total of 322 systems responded to the survey, approximately one-half filled out and returned the paper survey forms. The other half responded to the survey through a web site set up by the Division of Water Rights.

Based on survey responses, the average consumer water bill in the State of Utah is **\$37.11 per month per connection** and is comprised of direct periodic billings to consumers and annual property tax payments by consumers. Another measure of the cost of water is based on dollars per 1000 gallons. Survey results indicate that in Utah culinary water currently costs **\$1.34 per 1000 gallons**. Impact fees, connection fees and other forms of system revenue are not included in the average water bill or unit cost calculations.

The average water bill of \$37.11 per month per connection is 1.20% of the State Median Adjusted Gross Income (MAGI). This figure is based on the 2006 MAGI of \$36,960.

During 2006 water systems reported receiving \$326.1 million dollars in total revenue. This includes periodic billings, taxes, impact fees, connection fees, and other revenue. Other revenue sources identified in the survey include assessments, penalties, interest earned, and other fees.

In 2006, 47.9% of systems responding to the water rate structure information request reported that they employed a “uniform” rate structure. This means that the cost of water remains the same as water consumption increases. For this same period 51.3% of responding systems reported employing an “increasing” rate structure, which means that the cost of water increases as consumption increases. This number is up from 36% in the 2002 survey.

Approximately 24% of survey respondents reported receiving sufficient revenue to establish reserve accounts for future infrastructure improvements or replacement. Another 61% reported that they met their annual expenses and had a balanced budget.

Survey responses indicate that 8.1% of water systems in the State of Utah are considered worn out or have significant immediate problems. Another 20.8% are reported to be adequate for another five years. Fire protection is reported as poor by 3.7% of survey respondents.

Of the 322 survey respondents, 95 report that consumers in their service areas have access to secondary irrigation systems, either piped or ditch. Of the 95 reported secondary irrigation systems, 68 are operated by the culinary water provider and 27 are operated by a different entity.

Survey responses indicate that Utah's community drinking water systems anticipate improvement or replacement projects in the next four years (2007-2010) with a total expected cost of \$687 million, or an average of \$171 million per year.

Based on survey responses, approximately 27% of community water systems in Utah have developed a Master Plan. Only 23% of these Master Plans extend 20 years or more into the future. Existing Master Plans include an estimated \$1.6 billion in anticipated water system improvement or development projects. Extrapolating this data to include all 462 community water systems in the state, and including information reported for projects in the next four years, it is possible that up to \$9 billion (based on 2006 dollars) may be spent on water system improvement and development projects over the next 25 years.



# 2006 Community Water System Survey Report

## Introduction

The Utah Division of Drinking Water, in conjunction with the Utah Division of Water Rights and the Utah Division of Water Resources, conducts an annual survey of community drinking water systems within the state. This report presents the results of the 2006 Community Water System Survey.

A community drinking water system is defined as “a public drinking water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.” (See *Utah Administrative Rules* R309-100-4(2)(a))

There are currently 462 registered community water systems in the State of Utah, serving a reported population of 2,510,426 residents. Of those 462 systems, 322 (69.7%) responded to the survey. These 322 systems serve a reported population of 2,291,825 residents, or 91.3% of residents served by community drinking water systems. Of the 322 respondents, 240 provided satisfactory responses to questions regarding water bill information and consumer costs. The 240 systems represent a reported 1,776,845 residents, or 70.8% of the population served by all registered community drinking water systems.

## Typical Revenue Sources and Expenses

The financial objective of any public water system is to have enough revenue to cover operating expenses. It is also very desirable for a water system to have a capital reserve and replacement fund to cover the costs of infrastructure improvements. If the system happens to be a for-profit endeavor, providing a return on investment to shareholders is also an important consideration.

Table 1, adapted from the American Water Works Association publication *Water Rates (Manual M1, 2002)* Table 1-1, identifies typical system expenses as published by AWWA. The US General Accounting Office (renamed the Government Accountability Office in 2004) publication *Water Infrastructure – Information on Financing, Capital Planning, and Privatization* (GAO-02-764, 2002) identified a list of possible revenue sources, including grants and debt or equity funding sources, for water systems. This information is presented in Table 2. While the data presented by GAO is

<b>Table 1</b>
<b>Typical Water System Expenses</b>
<i>Operation &amp; Maintenance</i>
Source Supply
Pumping
Water Treatment
Transmission and Distribution
Customer Accounting
Administrative and General
<i>Capital Requirements</i>
Debt Service
Debt Service Reserve
Capital Improvements

somewhat dated, it represents the most recent national data on water system funding and revenue available.

<b>Table 2</b> Estimated Percentages of Utilities That Used Each Source of Funding in Their Most Recently Completed Fiscal Year		
1	User Charges	98%
<i>Other Local Revenues</i>		
2	Hook-up, connection, or tap fees	89%
3	Interest Earned	77%
4	Sales to other utilities	42%
5	Permit and inspection fees	41%
6	Reserves	35%
7	Assessments	14%
8	Property taxes	8%
9	Special operating cost levies	3%
<i>Grants</i>		
10	State grants	21%
11	Federal Grants	16%
<i>Debt and Equity</i>		
12	Revenue bonds	36%
13	State loans	25%
14	General Obligation bonds	19%
15	Federal loans	12%
16	Commercial loans	9%
17	Private activity bonds	2%
18	Sale of stock	2%

The historic goal of the Community Water System Survey is to determine the average cost for drinking water to the consumer in the State of Utah. The average cost is defined as the charge to the consumer through periodic billings and annual property taxes, identified as Items 1 and 8 in Table 2.

Connection fees, impact fees and other such potential sources of water system revenue are not included in the calculation of “average consumer cost.” Other studies and surveys, which describe the cost of supplying drinking water to the public, may use different methods to calculate that cost. If water cost information from different sources is used to compare the cost of water in Utah with other states or a national average, it is important to be aware of the possible differences in calculation methods to be sure the comparison is accurate and valid.

It is also important to understand that the cost of drinking water may not be directly linked to a specific supplier’s capability as a water utility. There are many factors that

influence the final cost of drinking water supplied to the public and each system must be judged based on those factors that bear the most influence on it.

### Average Consumer Cost

Based on survey results, the average consumer cost of drinking water for 2006 was **\$37.11 per month per connection**. This cost includes the charge to consumers through periodic billings and taxes but does not include impact, connection or other assessment fees. Table 3 presents a history of average consumer cost of drinking water at 5 year intervals over the past 15 years.

<b>Table 3</b> Average Consumer Cost of Drinking Water (\$ / month / connection)	
<i>Year</i>	<i>Cost</i>
2006	\$37.11
2001	\$33.89
1996	\$25.12
1991	\$19.16

Please note that the average water cost presented in this report is determined only from periodic billings and taxes paid to drinking water systems. Consumers in several drinking water systems throughout the state are served by separate irrigation systems. The costs associated with these irrigation systems are not included in this survey nor are they used in calculating the average consumer cost of drinking water.

Appendix A presents the survey results used to calculate the average consumer cost of drinking water in the State of Utah for 2006. The information is broken out into different categories, based on the system's responses to the survey questions.

### Average Water Bill as a Percent of Median Adjusted Gross Income

The Median Adjusted Gross Income (MAGI) is calculated from filed federal income tax returns except those that claim no deductions. The MAGI for 2006 is \$36,960. Based on survey data the 2006 average monthly water bill was \$37.11 which equates to 1.20% of the State MAGI. Table 4 shows a history of average monthly water bill as a percent of MAGI.

<b>Table 4</b> Average Water Bill as a Percent of MAGI	
<i>Year</i>	<i>% MAGI</i>
2006	1.20%
2001	1.25%
1996	1.13%
1991	1.12%

### Water Cost per 1000 Gallons

Another perspective on the cost of drinking water is provided when the cost is expressed in relation to the quantity used. Survey respondents were asked to identify the quantity of water used by consumers in their service area and to identify their annual revenue from those same consumers. Based on survey results, the average cost of drinking water per 1000 gallons consumed was calculated at \$1.34. Table 5 compares the cost per 1000 gallons from the 2006 survey to the result from the 2002 survey. Current survey results are detailed in Appendix B.

<b>Table 5</b> Cost per 1000 Gallons	
<i>Year</i>	<i>Cost</i>
2006	\$1.34
2002	\$1.36

## Residential Water Rate Structures

Water rate structure data were supplied by 267 survey respondents, 82.9% of total responses. Water rate structures throughout the state are characterized by how the cost of water paid by the consumer varies with the amount of water used by the consumer. Structures are labeled as:

- “**uniform**” if the cost of water remains the same no matter how much water is used;
- “**increasing**” if the cost of water goes up as consumption increases; and,
- “**decreasing**” if the cost of water goes down as consumption increases.

Those structures identified as “increasing” tend to encourage water conservation.

It is worthwhile to note that the type of rate structure is not dependent on the base rate charged by the system. Only the pricing trends of overage blocks, those charges for water consumption over a specified quantity of water, are considered when identifying the type of rate structure.

Table 6 presents a summary of rate structure results from the 2006 survey. For comparison purposes rate structure information from the 2001 survey is also provided.

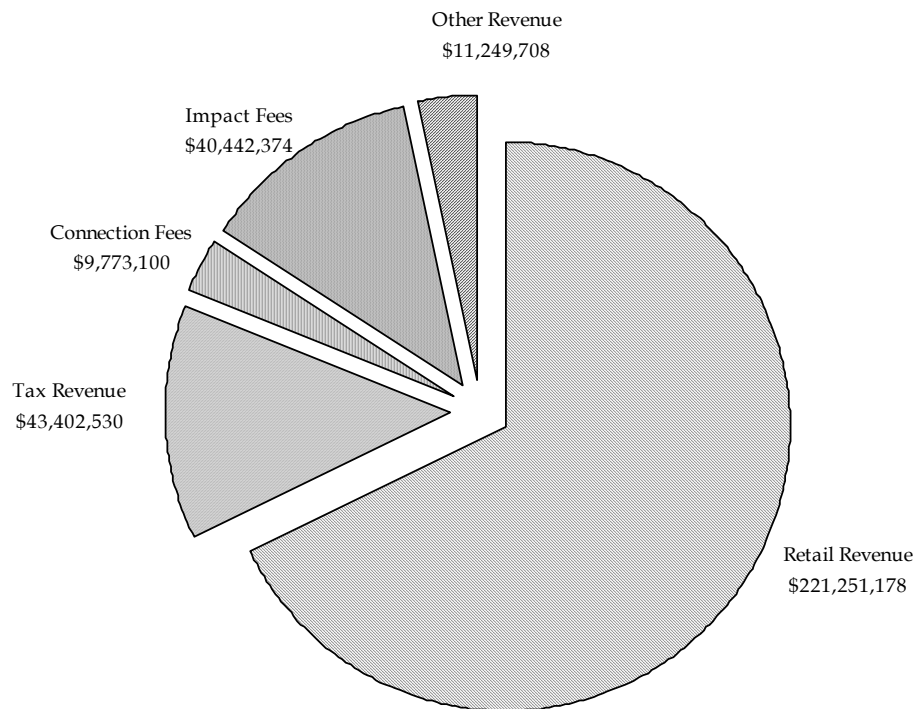
<b>Table 6</b>				
Water Rate Structures				
	<b>2006</b>		<b>2001</b>	
<i>Type</i>	<i># of Systems</i>	<i>% of Systems</i>	<i># of Systems</i>	<i>% of Systems</i>
Uniform	128	47.9%	138	66.0%
Decreasing	2	0.8%	5	2.0%
Increasing	137	51.3%	65	31.0%

Appendix C contains a list of survey respondents and their reported rate structures.

## Revenue Received by Drinking Water Systems

Figure 1 presents a summary of annual water system revenue as reported on the survey. The figure represents all revenue sources reported by survey respondents.

Other revenue sources reported most often by survey respondents include interest received, other fees, and penalties.



**Figure 1**  
Revenue Received by Water Systems – by Type of Revenue

## General Condition of Water Systems

Survey questions asked respondents to perform a self-evaluation of the financial and physical condition of their water system. Please refer to Appendix D for detailed information on survey responses.

The following highlights are noteworthy:

- 5% of survey respondents indicate their water systems operate in the red. Roughly half of these transfer money from other municipal funds to cover expenses, the other half plan to raise their rates to balance their budget.
- 24% of respondents report that their water system collects sufficient revenue, some of which is held in reserve for future improvements.
- 8% of respondents believe their water system is currently inadequate, worn out, or has significant immediate problems. While 21% report their system is adequate for the next 5 years.
- 29% of respondents report that their system has “poor” or “fair” fire protection capabilities.
- 15% of survey respondents indicated that their system regularly experiences leakage, with 1.3% reporting that their system is deteriorating.

## **Secondary Irrigation Systems**

Of the 322 survey respondents, 95 reported that consumers in their service area had access to a secondary irrigation system, either a pressurized system or ditch system. These irrigation systems provide a lower-quality water for use in watering lawns and gardens, with fewer instances of more general agricultural use (such as irrigating orchards or pasture). Of the 95 irrigation systems reported on the survey, 68 were operated by the drinking water system while 27 were operated by a different entity. Survey data on secondary irrigation systems is presented in Appendix E.

## **Drinking Water Project Expenditures – The Next Four Years**

Survey respondents indicated that they planned to spend more than \$687 million on drinking water system projects over the next four years (2007 – 2010). This is an average of over \$171 million per year.

Appendix F contains the survey data regarding anticipated projects over the next four years.

## **Drinking Water Project Expenditures – Beyond 2010**

The survey asked respondents to identify whether or not their water system had developed a Master Plan, how far into the future their master plan extended, and the estimated cost of all anticipated projects outlined in the Master Plan. Of the 322 systems responding to the survey only 86 reported that they had a Master Plan in place with only 20 of those master plans extending 20 years or more into the future. It is significant to note that these 86 systems are currently anticipating future water system projects totaling over \$1.6 billion (mostly equated to 2006 dollars). If this information, combined with the information of the previous section, is extrapolated to consider the 462 community water systems in the State of Utah it is possible that over \$9 billion dollars (based on 2006 dollars) will be spent on drinking water system improvements or development over the next 25 years.

## **Water Conservation and Management Plans**

Utah law (73-10-32 Utah Code Annotated) requires all community water systems serving 500 or more connections to develop and implement a water conservation and management plan. These plans, which are submitted to the Utah Division of Water Resources, are to contain information such as, existing and proposed water conservation measures, a description of the measures a water system will use to reach it's conservation goals and the extent to which these measures will be used, and a clearly stated water use reduction goal and implementation plan for each conservation measure.

While not an integral part of the Community Water System Survey, Water Conservation and Management Plans are considered an important part of a water system's management and preparedness structure. The Utah Division of Drinking Water recommends that all Community Water Systems develop and implement a Water Conservation and Management Plan as part of any planning process for future system improvements or development.

A sample plan is available on the Internet at:

<http://www.conservewater.utah.gov/agency/plans/OURCITY.pdf>